CLAIMS

WE CLAIM:

1. In an aircraft certified to fly to a maximum certified altitude, and having at least a maximum cabin-to-atmosphere differential pressure limit, a method of controlling aircraft cabin altitude when the aircraft exceeds the maximum certified flight altitude, the method comprising the steps of:

determining that the aircraft has exceeded the maximum certified altitude; and

automatically controlling cabin altitude based at least in part on aircraft altitude, such that the maximum cabin-to-atmosphere differential pressure limit is not exceeded.

2. The method of Claim 1, wherein the aircraft additionally has a nominal cabin-to-atmosphere differential pressure limit, and wherein the method further comprises the step of:

determining that cabin-to-atmosphere differential pressure has exceeded the nominal cabin-to-atmosphere differential pressure limit by a predetermined magnitude.

3. The method of Claim 1, wherein the step of automatically controlling further comprises:

automatically controlling cabin altitude as a function of aircraft altitude and cabin-to-atmosphere differential pressure, such that cabin-to-atmosphere differential pressure is substantially controlled to at least a predetermined differential pressure value that is less than the maximum cabin-to-atmosphere differential pressure limit.

4. The method of Claim 3, wherein the predetermined magnitude varies with aircraft altitude above the certified aircraft altitude.

5. The method of Claim 3, wherein:

the aircraft additionally has a nominal cabin-to-atmosphere differential pressure limit; and

the predetermined magnitude is greater than the nominal cabin-to-atmosphere differential pressure limit.

6. The method of Claim 1, further comprising:

determining a scheduled cabin altitude base at least in part on the determined aircraft altitude; and

automatically controlling aircraft cabin altitude based on the scheduled cabin altitude.

7. The method of Claim 7, wherein the scheduled cabin altitude is one of a reactive scheduled cabin altitude and an adaptive scheduled cabin altitude.

8. In an aircraft certified to fly to a maximum certified flight altitude, and having at least a nominal and a maximum cabin-to-atmosphere differential pressure limit, a method of controlling aircraft cabin altitude, comprising the steps of:

determining aircraft altitude; and

automatically controlling cabin altitude based at least in part on aircraft altitude and cabin-to-atmosphere differential pressure, such that:

(i) the nominal cabin-to-atmosphere differential pressure limit is not exceeded when the determined aircraft altitude is at or below the maximum certified altitude, and

(ii) the maximum cabin-to-atmosphere differential pressure limit is not exceeded when the determined aircraft altitude exceeds the maximum certified altitude by a first predetermined magnitude.

9. The method of Claim 1, wherein:

when the determined aircraft altitude exceeds the maximum certified flight altitude by the first predetermined magnitude, the cabin altitude is automatically controlled, such that actual cabin-to-atmosphere differential pressure is substantially controlled to at least a second predetermined magnitude less than the maximum cabin-to-atmosphere differential pressure limit.

10. The method of Claim 9, wherein the second predetermined magnitude varies with aircraft altitude above the certified aircraft altitude.

11. The method of Claim 9, wherein the second predetermined magnitude is greater than the nominal cabin-to-atmosphere differential pressure limit.

12. The method of Claim 8, wherein the cabin altitude is automatically controlled as a function of aircraft altitude.

13. The method of Claim 8, further comprising:

determining a scheduled cabin altitude based at least in part on the determined aircraft altitude; and

automatically controlling aircraft cabin altitude based on the scheduled cabin altitude.

14. The method of Claim 13, wherein the scheduled cabin altitude is one of a reactive scheduled cabin altitude and an adaptive scheduled cabin altitude.

15. An aircraft cabin pressure control system for an aircraft having at least a nominal cabin-to-atmosphere differential pressure limit and a maximum cabin-to-atmosphere differential pressure limit, the system comprising:

a controller adapted to receive a signal representative of aircraft altitude and operable, in response thereto, to supply valve command signals; and

an outflow valve coupled to receive the valve command signals from the controller and operable, in response thereto, to selectively move between an open and a closed position,

wherein the supplied valve command signals selectively move the outflow valve between the open and closed positions to thereby control aircraft cabin altitude, such that:

(i) the nominal cabin-to-atmosphere differential pressure limit is not exceeded when the signal representative of aircraft altitude indicates aircraft altitude is at or below the maximum certified altitude, and

(ii) the maximum cabin-to-atmosphere differential pressure limit is not exceeded when the signal representative of aircraft altitude indicates aircraft altitude exceeds the maximum certified altitude by a first predetermined magnitude.

16. The system of Claim 15, further comprising:

a first sensor operable to sense actual aircraft altitude and supply the signal representative thereof to the controller

17. The system of Claim 15, wherein:

when the aircraft altitude exceeds the maximum certified flight altitude by the first predetermined magnitude, the supplied valve command signals selectively move the outflow valve between the open and closed positions to thereby control aircraft cabin altitude such that actual cabin-to-atmosphere differential pressure is substantially controlled to at least a second predetermined magnitude less than the maximum cabin-to-atmosphere differential pressure limit.

18. The system of Claim 17, wherein the second predetermined magnitude varies with aircraft altitude above the certified aircraft altitude.

19. The system of Claim 17, wherein the second predetermined magnitude is greater than the nominal cabin-to-atmosphere differential pressure limit.

20. The system of Claim 15, wherein:

the controller is further operable to determine a scheduled cabin altitude based at least in part on the signal representative of aircraft altitude,

wherein the supplied valve command signals selectively move the outflow valve between the open and closed positions to thereby control aircraft cabin altitude in accordance with the scheduled cabin altitude.

21. The system of Claim 20, wherein the scheduled cabin altitude is one of a reactive scheduled cabin altitude and an adaptive scheduled cabin altitude.

22. The system of Claim 20, further comprising:

a memory having the scheduled cabin altitude stored therein.